BRAWN™ MIXER, INC.

BG SERIES

MIXING SOLUTIONS™

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Operation & Maintenance Manual

BG SERIES

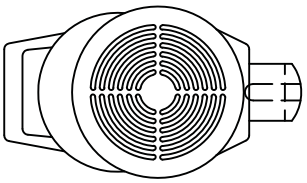
SERIAL NUMBER

_____

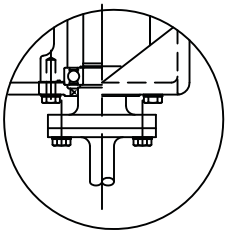
CUSTOMER: _____

SALES REP: _____

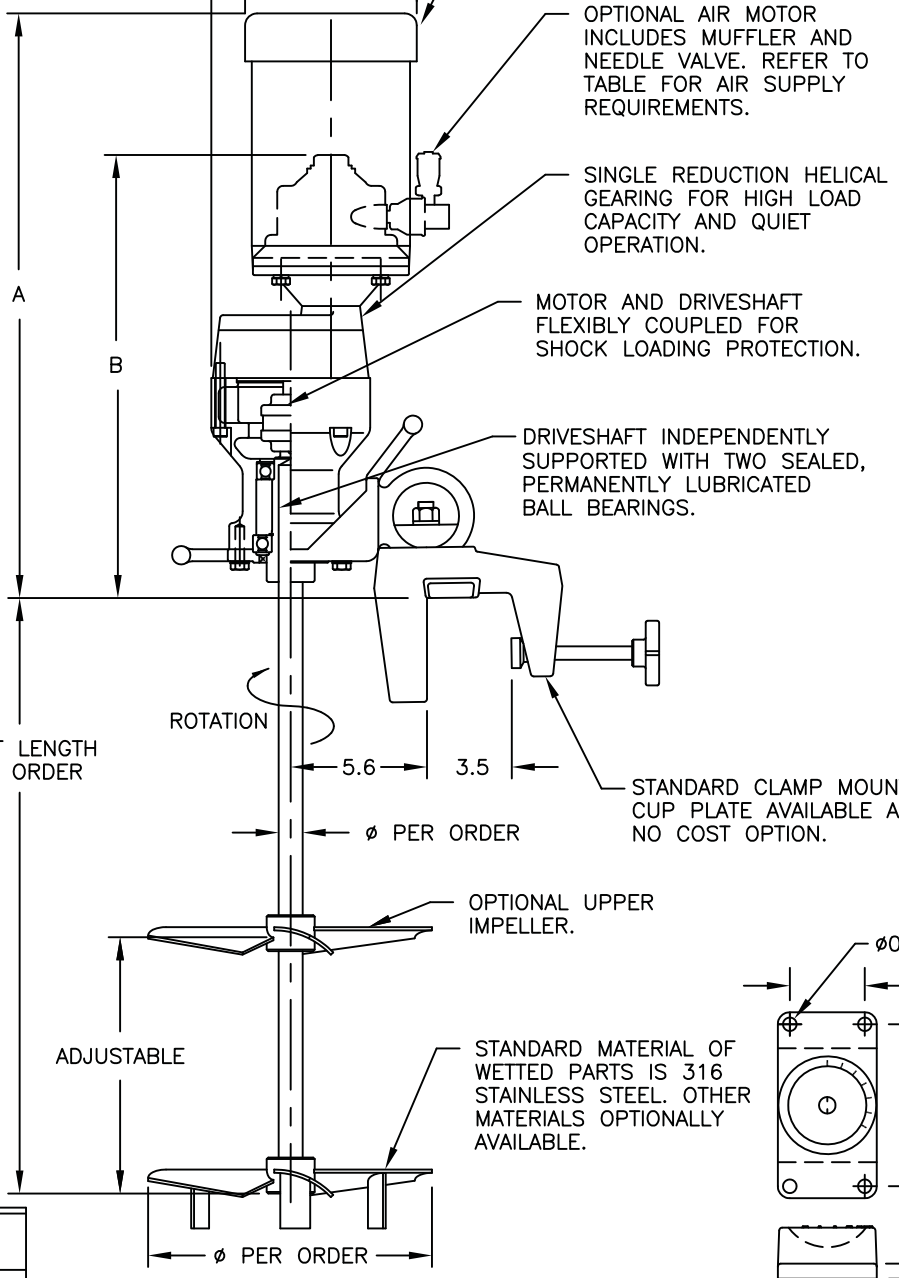
MIXING SOLUTIONS™



PLAN VIEW



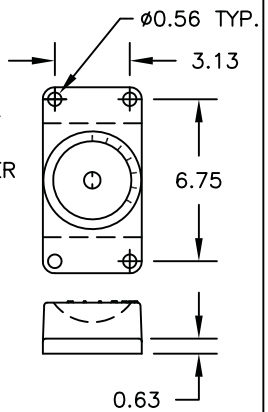
OPTIONAL
RIGID SHAFT
COUPLING


10.2
ø7.2
A
B
SHAFT LENGTH
PER ORDER
ROTATION
5.6
3.5
ø PER ORDER
ADJUSTABLE
ø PER ORDER
STANDARD TEFC ELECTRIC MOTORS FROM 1/3 TO 2 HORSEPOWER AVAILABLE IN SINGLE AND THREE PHASE. MOTOR OPTIONS INCLUDE: DC WITH VARIABLE SPEED CONTROL, EXPLOSION–PROOF AND AIR.
OPTIONAL AIR MOTOR INCLUDES MUFFLER AND NEEDLE VALVE. REFER TO TABLE FOR AIR SUPPLY REQUIREMENTS.
SINGLE REDUCTION HELICAL GEARING FOR HIGH LOAD CAPACITY AND QUIET OPERATION.
MOTOR AND DRIVESHAFT FLEXIBLY COUPLED FOR SHOCK LOADING PROTECTION.
DRIVESHAFT INDEPENDENTLY SUPPORTED WITH TWO SEALED, PERMANENTLY LUBRICATED BALL BEARINGS.
STANDARD CLAMP MOUNT. CUP PLATE AVAILABLE AS NO COST OPTION.
OPTIONAL UPPER IMPELLER.
STANDARD MATERIAL OF WETTED PARTS IS 316 STAINLESS STEEL. OTHER MATERIALS OPTIONALLY AVAILABLE.

MIXER MODEL	DIMENSION		
	A	B	*WGT.
BGM33/50	22.7	17.9	77/84
BGM75	23.2	18.5	87
BGM100	24.6	18.5	87
BGM150	25.1	18.5	91
BGM200	26.1	19.9	99
BGM300	26.9	19.9	107
BGM500	29.3	22.9	133

AIR MOTOR HORSEPOWER AND AIR CONSUMPTION				
HORSEPOWER	1/2	1	2	3
CFM AIR CONSUMPTION @ PSI	23 / 40	40 / 80	70 / 70	100 / 70
INLET SIZE (NPT)	3/8	3/8	1/2	1/2

*WEIGHT IS IN POUNDS WITH ELECTRIC MOTOR. DOES NOT INCLUDE SHAFT, IMPELLERS, OR AIR MOTOR.



OPTIONAL
CUP PLATE

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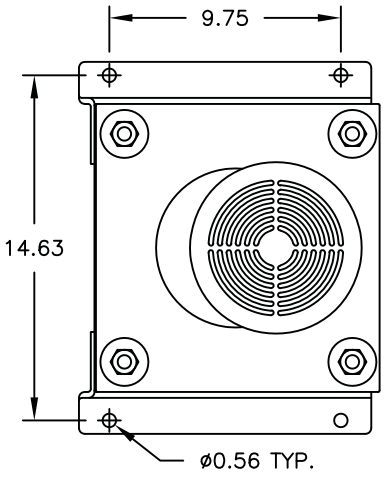
APPROVED BY: | DATE:

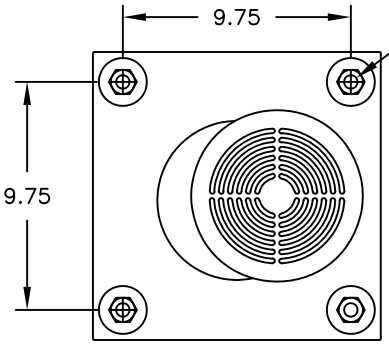
BRAWN™ MIXER, INC.
3389 128TH AVENUE
HOLLAND, MI. 49424
PH. 616–399–5600
FAX 616–399–3084

MIXER MODEL
BGM33 THRU 500
GEAR DRIVE
DIMENSION AND ASSEMBLY DRAWING

DWG. NO. A– TK0015 | REV. A



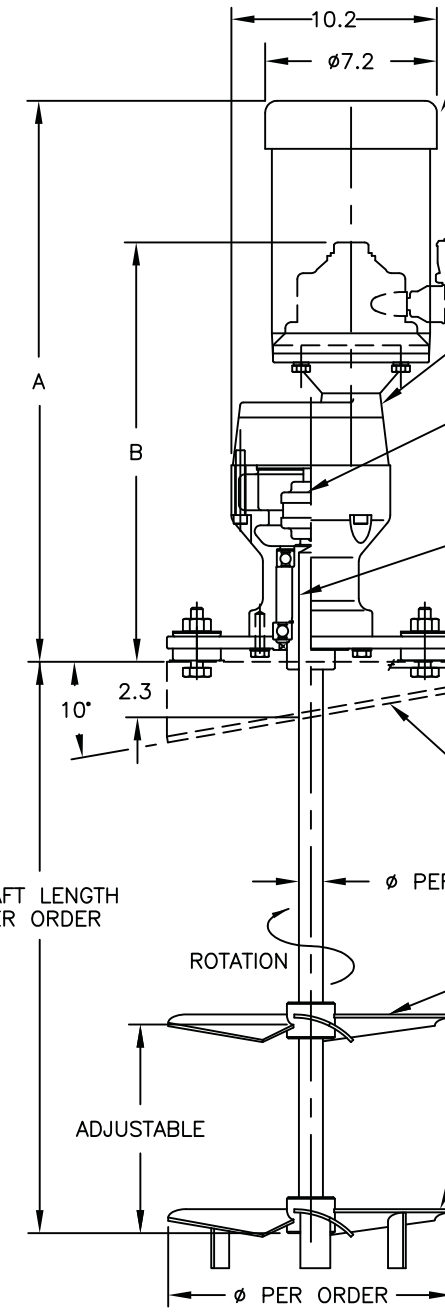
OPTIONAL ANGLE RISER MOUNTING



PLAN VIEW

ø0.56 HOLES IN MOUNTING STRUCTURE REQUIRED.

STANDARD TEFC ELECTRIC MOTORS FROM 1/3 TO 2 HORSEPOWER AVAILABLE IN SINGLE AND THREE PHASE. MOTOR OPTIONS INCLUDE: DC WITH VARIABLE SPEED CONTROL, EXPLOSION–PROOF AND AIR.



OPTIONAL AIR MOTOR INCLUDES MUFFLER AND NEEDLE VALVE. REFER TO TABLE FOR AIR SUPPLY REQUIREMENTS.

SINGLE REDUCTION HELICAL GEARING FOR HIGH LOAD CAPACITY AND QUIET OPERATION.

MOTOR AND DRIVESHAFT FLEXIBLY COUPLED FOR SHOCK LOADING PROTECTION.

DRIVESHAFT INDEPENDENTLY SUPPORTED WITH TWO SEALED, PERMANENTLY LUBRICATED BALL BEARINGS.

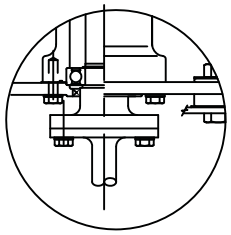
MOUNTING STRUCTURE (BY OTHERS).

FLEXIBLE SHOCK MOUNTS

OPTIONAL ANGLE RISER

OPTIONAL UPPER IMPELLER.

STANDARD MATERIAL OF WETTED PARTS IS 316 STAINLESS STEEL. OTHER MATERIALS OPTIONALLY AVAILABLE.



OPTIONAL RIGID SHAFT COUPLING

MIXER MODEL	DIMENSION		
	A	B	*WGT.
BGM33/50	21.7	17.5	70/77
BGM75	22.2	19.2	80
BGM100	23.6	19.2	80
BGM150	24.1	20.8	84
BGM200	25.1	20.8	92
BGM300	25.6	18.9	116
BGM500	27.0	19.8	131

AIR MOTOR HORSEPOWER AND AIR CONSUMPTION				
HORSEPOWER	1/2	1	2	3
CFM AIR CONSUMPTION @ PSI	23 @ 40	40 @ 80	70 @ 70	100 @ 70
INLET SIZE (NPT)	3/8	3/8	1/2	1/2

*WEIGHT IS IN POUNDS WITH ELECTRIC MOTOR. DOES NOT INCLUDE SHAFT, IMPELLERS OR AIR MOTOR.

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3389 128TH AVENUE
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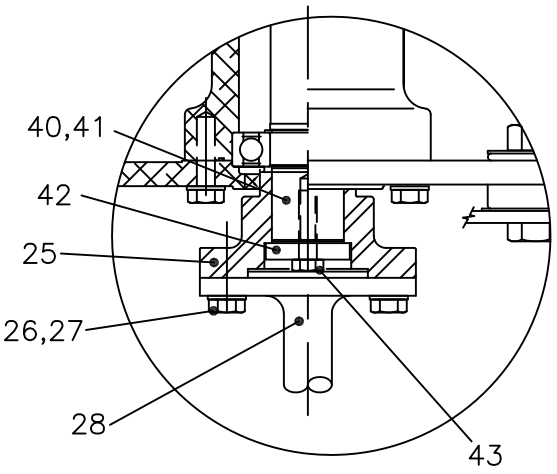
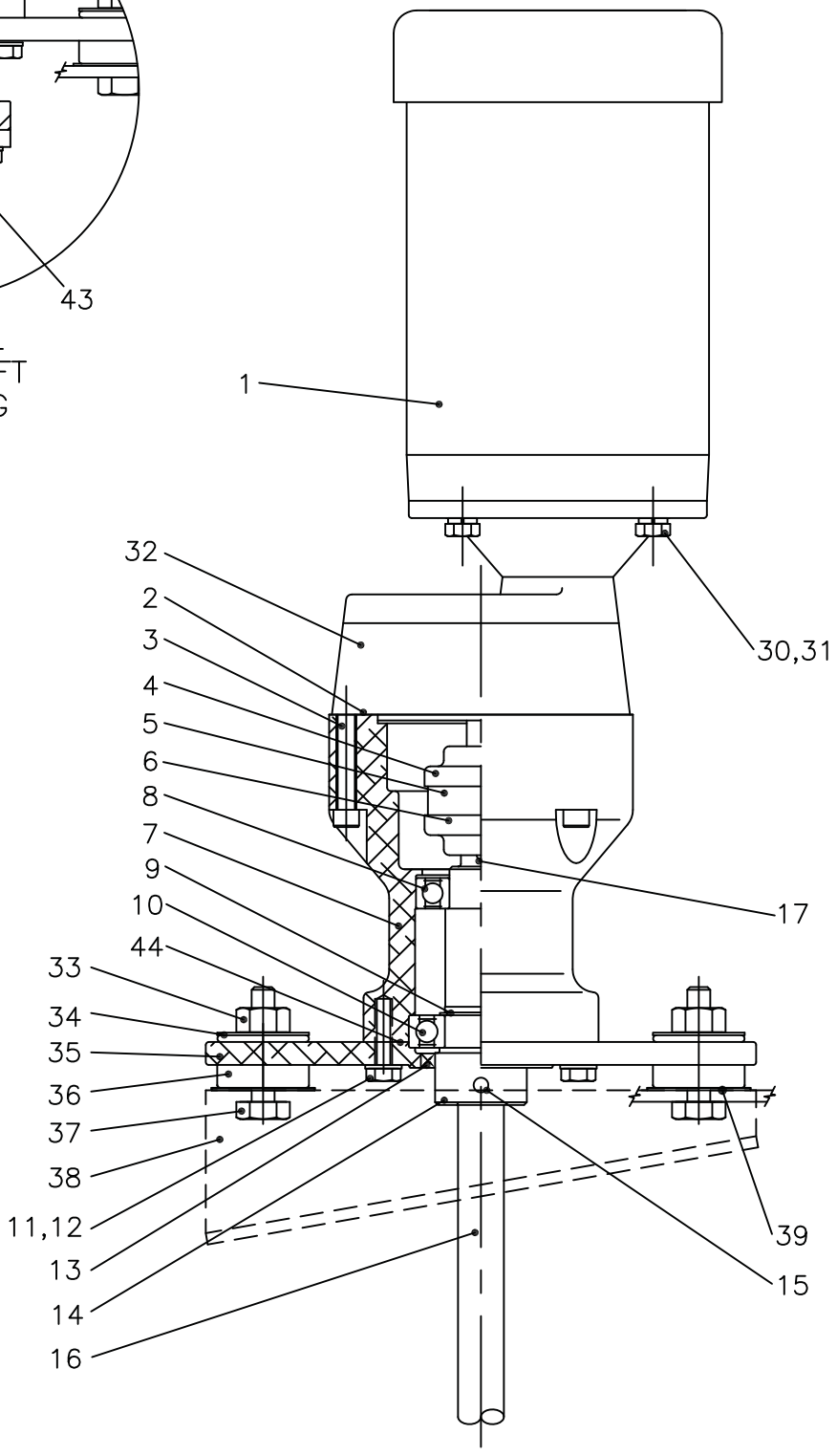
PH. 616–399–5600
FAX 616–399–3084

MIXER MODEL
BGMF33 THRU 500
GEAR DRIVE
DIMENSION AND ASSEMBLY DRAWING

DWG. NO. A– TK0016 | REV. A



OPTIONAL
RIGID SHAFT
COUPLING



ITEM NO.	QTY.	PART NAME
44	1	O-RING
43	1	HEX HEAD CAP SCREW (OPT.)
42	1	THRUST WASHER (OPTIONAL)
41	1	KEY (OPTIONAL)
40	1	DRIVE SHAFT (OPTIONAL)
39	4	HEAD WASHER
38	2	ANGLE RISERS (OPTIONAL)
37	4	BOLT
36	4	ISOLATION MOUNT
35	1	MOUNTING PLATE
34	4	TAIL WASHER
33	4	NUT
32	1	GEARBOX
31	4	LOCK WASHER
30	4	HEX HEAD CAP SCREW
28	1	RIGID FLANGE SHAFT (OPT.)
27	4	LOCK WASHER
26	4	HEX HEAD CAP SCREW
25	1	RIGID FLANGE COUPLING (OPT.)
17	1	KEY
16	1	MIXER SHAFT
15	2	SET SCREW
14	1	CHUCK SHAFT
13	1	OIL SEAL
12	6	LOCK WASHER
11	6	HEX HEAD CAP SCREW
10	1	BALL BEARING
9	1	SNAP RING
8	1	BALL BEARING
7	1	HOUSING
6	1	COUPLING HUB
5	1	SLEEVE
4	1	COUPLING HUB
3	4	SOCKET HEAD CAP SCREW
2	1	O-RING
1	1	MOTOR

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HOLLAND, MI. 49424
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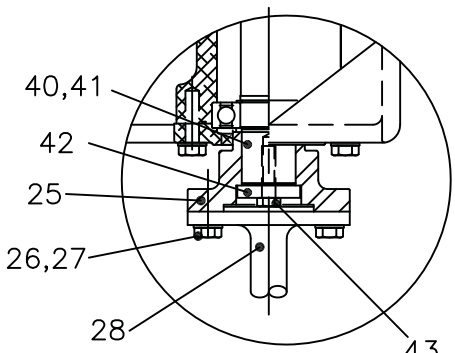
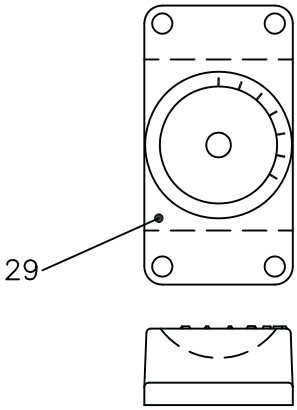
FAX 616-399-3084

MIXER MODEL
BGMF33 THRU 500
GEAR DRIVE
DIMENSION AND ASSEMBLY DRAWING

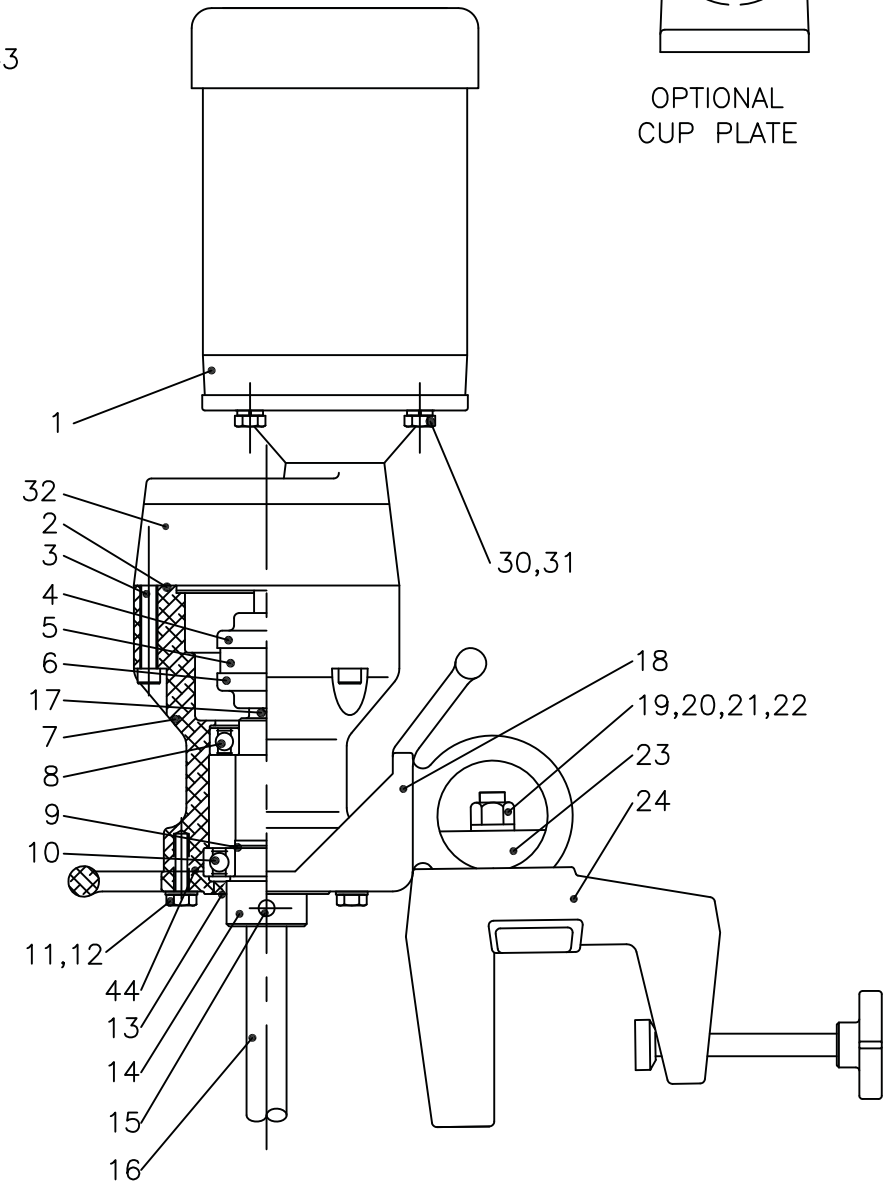
DWG. NO. A- TK0028 | REV.



OPTIONAL
RIGID SHAFT
COUPLING



OPTIONAL
CUP PLATE



ITEM NO.	QTY.	PART NAME
44	1	O-RING
43	1	HEX HEAD CAP SCREW (OPT.)
42	1	THRUST WASHER (OPT.)
41	1	KEY (OPT.)
40	1	DRIVE SHAFT (OPT.)
32	1	GEARBOX
31	4	LOCK WASHER
30	4	HEX HEAD CAP SCREW
29	1	CUP PLATE (OPT.)
28	1	RIGID FLANGE SHAFT (OPT.)
27	4	LOCK WASHER
26	4	HEX HEAD CAP SCREW
25	1	RIGID FLANGE COUPLING (OPT.)
24	1	CLAMP ASSEMBLY
23	1	SHOE
22	1	FLAT WASHER
21	1	LOCK WASHER
20	1	NUT
19	1	BOLT
18	1	BALL MOUNT
17	1	KEY
16	1	MIXER SHAFT
15	2	SET SCREW
14	1	CHUCK SHAFT
13	1	OIL SEAL
12	6	LOCK WASHER
11	6	HEX HEAD CAP SCREW
10	1	BALL BEARING
9	1	SNAP RING
8	1	BALL BEARING
7	1	HOUSING
6	1	COUPLING HUB
5	1	SLEEVE
4	1	COUPLING HUB
3	4	SOCKET HEAD CAP SCREW
2	1	O-RING
1	1	MOTOR

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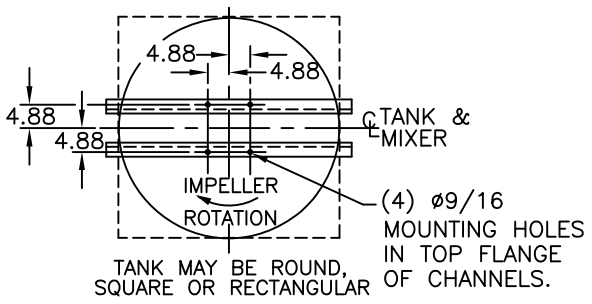
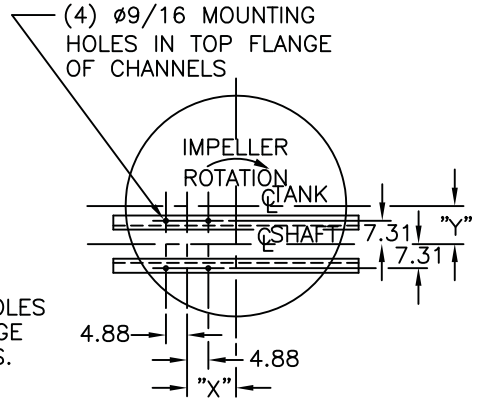
3389 128TH AVENUE
HOLLAND, MI. 49424
PH. 616-399-5600
FAX 616-399-3084

MIXER MODEL
BGM33 THRU 500
GEAR DRIVE
DIMENSION AND ASSEMBLY DRAWING

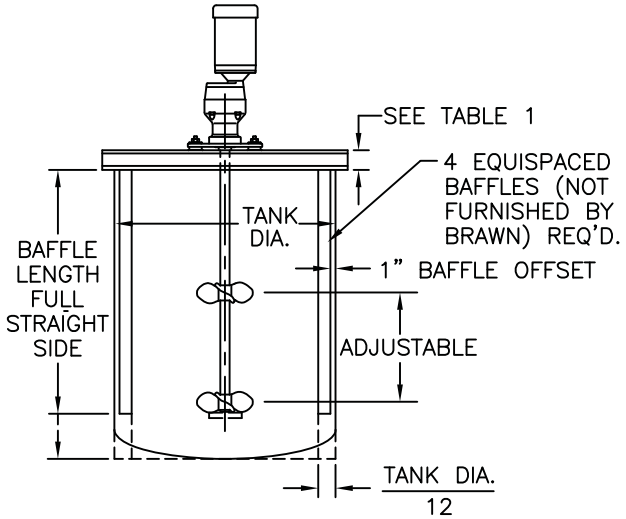
DWG. NO. A- TK0030 | REV. A



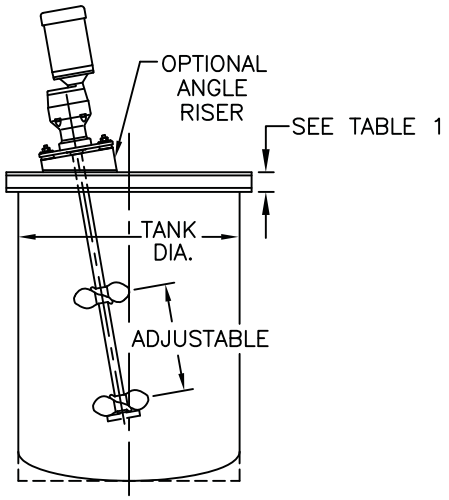


DESIGN LOADS				RECOMMENDED CHANNEL SIZE	
MIXER MODEL BDF/BGMF	DOWNWARD LOAD (LBS.)	BENDING (IN. LBS.)	TORSIONAL (IN. LBS.)	BEAM SPAN UP TO AND INCL.	
				96"	144"
33	230	4,300	150	C4 x 7.25#	C6 x 8.2#
50	245	4,300	200		
75	260	4,300	300		
100	275	4,300	400		
150	360	7,500	600		
200	380	7,500	800		
300	400	8,700	1,200		
500	420	8,700	2,000		

TABLE 1



VERTICAL ON CENTER MOUNTING



ANGULAR OFF-SET MOUNTING
(SEE TABLE 2 FOR DIMENSIONS)

TANK DIA.	"X"	"Y"
30"	9"	5"
33"	10"	5.5"
36"	11"	6"
39"	11.5"	6.5"
42"	13.5"	7"
45"	14.5"	7.5"
48"	15.5"	8.75"
51"	17"	9.5"
54"	18"	10"
57"	19"	10.5"
60"	20"	11"
63"	21.5"	12"
66"	22.5"	12.5"
69"	23.5"	13"
72"	25"	14"
75"	26"	14.75"
78"	27"	15.5"

TANK DIA.	"X"	"Y"
81"	28.5"	16.5"
84"	29.5"	17"
90"	31.5"	18"
93"	32.5"	18.5"
96"	34"	19.5"
99"	35"	20"
102"	36"	20.5"
105"	37"	21"
108"	38.5"	22"
111"	39.5"	22.5"
114"	40.5"	23"
117"	42"	24"
120"	43"	24.5"
126"	45.5"	26"
132"	47.5"	27"
138"	50"	28.5"
144"	52"	30"

TABLE 2

NOTES:

1. WARRANTY APPLIES ONLY TO ITEMS FURNISHED BY BRAWN MIXER, INC. ALL OTHER EQUIPMENT AND DESIGNS ARE THE RESPONSIBILITY OF OTHERS. BRAWN MIXER, INC. DOES NOT WARRANT, GUARANTEE, OR ASSUME ANY RESPONSIBILITY FOR THE DESIGN OR CONSTRUCTION OF THE MOUNTING THE MIXER.
2. DESIGN LOADS ARE GREATER THAN ACTUAL LOADS BY A SUITABLE FACTOR TO PROVIDE FOR ADEQUATE DESIGN OF MIXER MOUNTING STRUCTURE.
3. ROUND TANKS REQUIRE BAFFLES AS SHOWN UNLESS OTHERWISE INSTRUCTED BY BRAWN MIXER, INC.

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FILE NO. SDB103C DATE 6-3-98 ©1998

BRAWN MIXER, INC.

MIXER MODEL

BDF & BGMF MOUNTING

DIMENSION AND ASSEMBLY DRAWING

3389 ~ 128th Avenue Holland, MI 49424 Phone: 616/399-5600 Fax 616/399-3084

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Exploded View Drawings / Spare Parts Pricing

SAFETY

The precautions mentioned in this manual are not intended to cover all hazards that may exist in a plant or on this equipment. Using safety mechanisms requires the constant attention of everyone in the vicinity of this (or any) equipment.

A plant and the related equipment are only as safe as the personnel are safety-minded. Proper equipment maintenance and the use of personal safety devices will contribute as much toward safety as will any number of mechanical safety devices.

WARNING

- To assure maximum safety, optimum performance, and to gain knowledge of the product, it is essential that you or any other operator of this equipment read and understand the contents of this manual before the mixer is operated.
- Installation, operation and maintenance must be performed only by qualified personnel.
- Do not operate this equipment unless all safety devices are installed and working properly. Check all devices prior to starting the equipment.
- Disconnect and lock out electrical power before installing or servicing the mixer.
- Do not touch rotating parts (keep all guards and safety devices installed while operating).
- Develop a safety checklist for this equipment and perform regular maintenance to ensure continued and proper operation. Develop a safety checklist for this equipment and perform regular maintenance to ensure continued and proper operation.
- Do not make any field changes or modifications without reviewing the change with your BRAWN sales representative or the BRAWN Customer Service Department.

CUSTOMER SERVICE

Mixer Model # .....**BGM-SERIES**
Mixer Serial # _____
Contact:

- Customer Service..... 616/399-5600
- E-Mail ..... brawn@brawnmixer.com

You have received a quality engineered and manufactured BRAWN Mixer. We value your business, and we will strive to provide you with the proper service and equipment to meet your needs.

The information contained in this BRAWN Mixer Operator's Manual is designed to assist you in putting your BRAWN Mixer into operation without further delay. **Please read the entire manual before attempting to start your mixer.** If you have any further questions or if, by some chance, there are some missing components, contact your BRAWN Mixer Representative or the factory immediately.

We welcome your comments and suggestions concerning any BRAWN Mixer product. Please direct these comments in writing to the National Sales Manager at BRAWN Mixer, Inc., located in Holland, Michigan. To expedite troubleshooting service, please make your initial contact through your BRAWN Mixer Representative. If, for whatever reason, your representative cannot be reached and you have an emergency condition, please call us directly at 616/399-5600 and ask for the Customer Service Department.

Remember, you are backed by your BRAWN Mixer Technical representative and the factory support team. We are here to assist you; let us know how we can be of help.

Please see the back cover of this manual for the location and contact for your Brawn Mixer Representative.

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INITIAL INSPECTION

1. Upon receipt of your Brawn Mixer, check for possible shipping damage. Report any damage immediately to the carrier and to Brawn Mixer, Inc.

2. All Brawn Mixers are shipped with the shaft and impeller(s) disassembled from the drive assembly. In addition, the clamp or cup mount and any mounting hardware for portable mixers are shipped loose.

3. Storage: Mixers should not be stored near vibrating machinery to avoid damage to the bearings. Store mixers as packaged by the factory. For longer storage periods, consult factory. If electric motors have been subjected to humid conditions, check the insulation resistance between phase and mass and between the different phases. The resistance should not be less than 100 megohms. If the resistance is less, please consult the factory. If mixer is stored for more than a year, the condition of the gear lubricant should be checked before the mixer is put in operation (see lubrication instructions).

INSTALLATION

[REFER TO ASSEMBLY / DIMENSION DRAWING]

Refer to the mixer installation / assembly drawing for important mounting structure design, assembly, mounting and dimensional data.

1. Model BGM portable mixers are designed with handles incorporated in the mounting base. These are intended for lifting of the mixer assembly.

2. For clamp-mount units, install the mixer drive on the mounting structure and secure by tightening the clamp screw.
   - For fixed-mount and cup-plate mount mixers, install the mixer drive on the mounting structure and secure with properly-sized, Grade 5 or better hardware. Torque the hardware as recommended in **TABLE 1**.

3. Inspect the impeller bore and shaft surface for evidence of damage and repair, if required, before installing the impeller(s) on the shaft or the shaft into the coupling. Install the impeller(s) on the mixer shaft by carefully sliding the impeller hub over the shaft to its proper location and tighten the set screws. It is recommended that the shaft be spotted with a drill point at the setscrew locations to prevent loosening of the impeller(s).

4. Install mixer shaft **[16]** by inserting the end with machined groove into the chuck driveshaft **[14]**. (It is recommended that the mixer shaft portion engaged in chuck driveshaft be coated with an anti-seize compound.) Tighten setscrews **[15]** to secure shaft.
   - If optional rigid shaft coupling **[25]** is furnished, connect the mixer shaft **[28]** and rigid driveshaft couplings by carefully engaging the shaft rabbeted faces and installing the mounting hardware **[26** & **27]**. Be careful not to damage the coupling faces or rabbets, as this can cause excessive shaft run-out that will affect the life of the mixer.
   - 2-D and 3-D depictions of these items are shown in the front and back of this manual.

TABLE 1: RECOMMEND TORQUE VALUES

HARDWARE SIZE	*TORQUE VALUES (FOOT POUNDS)*	
	STANDARD GRADE 2 & 300 SERIES STAINLESS	*HIGH STRENGTH GRADES 5 & 8*
5/16	9	13
3/8-16	17	27
1/2-13	40	65
5/8-11	85	125

BOLT-TIGHTENING RECOMMENDATIONS:
Inadequately or improperly tightened hardware can loosen, due to vibration during mixer operation. This can result in reduced mixer life or damage to equipment. Recommended torque values for tightening all in-tank and mounting hardware are listed in **TABLE 1**. These average torque values should be considered only as a guide and not as absolute values.

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INSTALLATION, CONT.

The following guidelines are based on mixing in vertical cylindrical tanks with flat, dished, or shallow cone bottoms. Mixer installations may vary with tank shape, retention times, starting conditions and other requirements.

1. For liquid levels 0.5 to 1.1 times the tank diameter, a single impeller is suitable.
2. For liquid levels 1.1 to 1.6 times the tank diameter, use dual impellers.
3. Impellers may be located from 0.5 to 2.0 impeller diameters off the tank bottom, with one diameter off bottom being optimum.
4. When dual impellers are necessary, spacing between impellers should be approximately two impeller diameters with gear drives, and four to five impeller diameters with direct drive mixers.
5. Mixer position in tank should be as shown in **FIGURE A or B** [below] for maximum turnover of liquid.

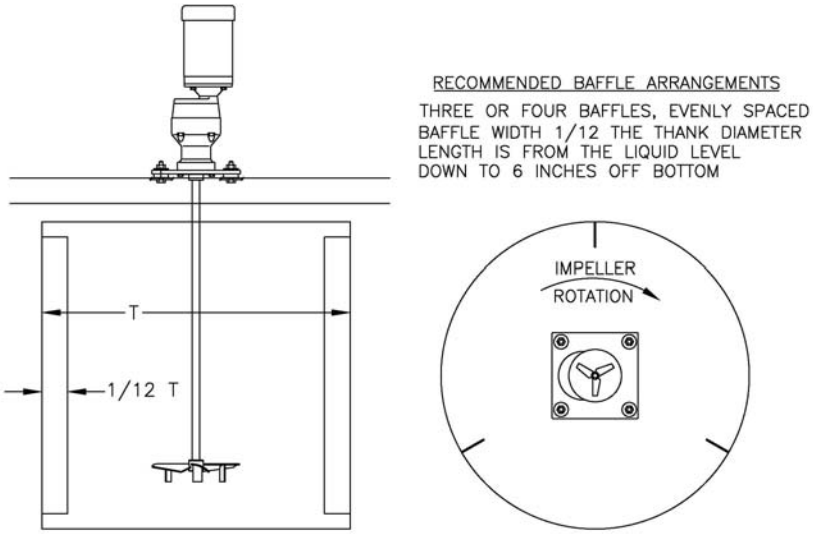

FIGURE A

START UP

1. All units are lubricated before shipment. The lubricant level should be checked with the unit positioned vertically. Lubricant should only be added if the level is below the top of the gear. Do not fill beyond the top of the gear.

2. Connect the motor in accordance with the motor nameplate. The motor starter should incorporate overload protection. Before operating the mixer, jog the motor and observe mixer shaft rotation. Proper rotation is clockwise, as viewed from the top, unless otherwise noted.

3. Check all bolts and fasteners for tightness. It is good maintenance practice to recheck all bolts after two weeks of operation and periodically thereafter. Refer to **TABLE 1** for recommended torque values.

4. Do not attempt to start mixer with impellers buried in solids or solidified liquids

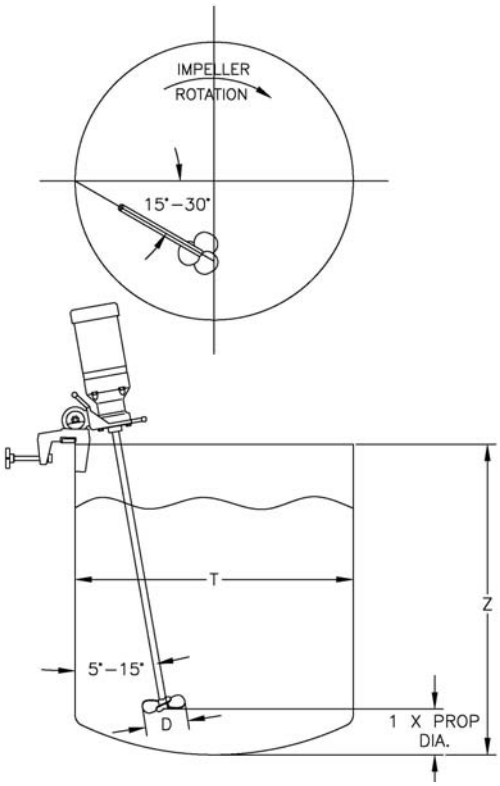

FIGURE B

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ELECTRIC MOTORS

This equipment contains HAZARDOUS VOLTAGES, ROTATING PARTS AND HOT SURFACES. SEVERE PERSONAL INJURY OR PROPERTY DAMAGE CAN RESULT IF SAFETY INSTRUCTIONS ARE NOT FOLLOWED. Only qualified personnel should work on or around this equipment after becoming thoroughly familiar with all warnings, safety notices, and maintenance procedures contained herein. The successful and safe operation of this equipment is dependant upon proper handling, installation, operation and maintenance.

WARNING

Explosion-proof motors-these motors are constructed to comply with the U.L. Label Service Procedure Manual. When repairing and reassembling a motor that has an underwriter's label, it is imperative that the unit be re-inspected and:

1. All original fits and tolerance be maintained.
2. All plugs and hardware be securely fastened.
3. Any parts replacements, including hardware, be accurate duplicates of the originals.

Repair work on explosion-proof motors can only be done by the original manufacturing or U.L. certified shops. Violations of any of the above items will invalidate the significance of the U.L. Label.

STORAGE

Motors must be stored in a clean, dry, well ventilated location free from vibration and rapid or wide temperature variations. If the unit is to be stored longer than three months, consult factory. Ball bearing motors are shipped from the factory properly lubricated and ready to operate. When in storage, the motor shaft must be turned several rotations every month and bearings relubricated every year. On non-explosion-proof TEFC motors, a removable plug in the bottom of the frame or housing permits removal of accumulated moisture. Drain regularly if storage atmosphere results in formation of condensation.

INSTALLATION

Installation must be handled by qualified service or maintenance personal.

A wiring diagram is generally located on the conduit box of the motor.

OPERATION

CAUTION

Repeated trial starts can overheat the motor and may result in motor burnout. If repeated trial starts are made, allow sufficient time between trials to permit heat to dissipate from windings and rotor to prevent overheating. Starting currents are several times running currents, and heating varies as the square of the current.

After installation is completed, but before motor is put in regular service, make an initial start as follows:

1. Check motor starting and control device connections against wiring diagrams.
2. Check voltage, phase, and frequency of line circuit (power supply) against motor nameplate.
3. If possible, remove external load (disconnect drive) and turn shaft by hand to ensure free rotation. This may have been done during installation procedure; if so, and conditions have not changed since, this check may not be necessary.
   a. If drive is disconnected, run motor at no load long enough to be certain that no unusual conditions develop. Listen and feel for excessive noise, vibration, clicking, or pounding. If present, stop motor immediately. Investigate the cause and correct before putting motor in service.
   b. If drive is not disconnected, interrupt the starting cycle after motor has accelerated to low speed. Carefully observe for unusual conditions as motor coasts to a stop.
4. When checks are satisfactory, operate at minimum load and look for unusual condition. Increase load slowly to maximum. Check unit for satisfactory operation.

CAUTION

Guard against overloading. Overloading causes overheating and overheating means shortened insulation life. A motor subjected to a 10°C temperature rise above the maximum limit for the insulation may cause the insulation life to be reduced by 50%. To avoid overloading, be sure motor current does not exceed nameplate current when nameplate voltage is applied.

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ELECTRIC MOTORS, Cont.

Electric motors operating under normal conditions become quite warm. Although some places may feel hot to the touch, the unit may be operational within limits. Use a thermocouple to measure winding temperature.

The total temperature, not the temperature rise, is the measure of safe operation. Investigate the operating conditions if the total temperature measured by a thermocouple placed on the windings exceeds:

230°F (110°C) for class "B" insulation
275°F (135°C) for class "F" insulation
302°F (150°C) for class "H" insulation

VOLTAGE REGULATION

Motors will operate successfully under the following conditions of voltage and frequency variation, but not necessarily in accordance with the standard established for operation under rated conditions:

1. When the variation in voltage does not exceed 10% above or below normal, with all phases balanced.
2. When the variation in frequency does not exceed 5% above or below normal.
3. When the sum of the voltage and frequency of the voltage does not exceed 10% above or below normal (provided the frequency variation does not exceed 5%).

MAINTENANCE

Failure to properly maintain the equipment can result in severe personal injury and product failure. The instructions contained herein should be carefully reviewed, understood and followed. The following maintenance procedures should be performed regularly:

1. Bearing lubrication (When regreaseable bearings are supplied)
2. Insulation resistance check
3. Cleaning

This checklist does not represent an exhaustive survey of maintenance steps necessary to ensure safe operation of the equipment. Particular applications may require further procedures

Dangerous voltages are present in the equipment which can cause severe personal injury and product failure. Always de-energize and ground the equipment before maintenance. Maintenance should be performed only by qualified personal.

The use of unauthorized parts in the repair of the equipment, tampering by unqualified personal, or removal or alteration of guards or conduit covers will result in dangerous conditions which can cause severe personal injury or equipment damage. Follow all safety instructions contained herein.

BEARING LUBRICATION

(When re-greaseable bearings are supplied)

CAUTION

Do not lubricate motor while in operation, since excess grease will be forced through the bearings and into the motor before it will force its way out the drain plug. Excess grease accumulation on windings reduces insulation life.

Prior to shipment, motor bearings are lubricated with the proper amount and grade to provide six months of satisfactory service under normal operation and conditions.

For best results, grease should be compounded from a polyurea base and a good grade of petroleum oil. It should be of No. 2 consistency and stabilized against oxidation. Operating temperature ranges should be from -15°F to +250°F for class B insulation, and to +300°F for class F and H. Most leading oil companies have special bearing greases that are satisfactory.

Re-lubricate bearings every six months (more often if conditions require), as follows:

1. Stop the motor. Lock out the switch.
2. Thoroughly clean off pipe plugs and remove from housings.
3. Remove hardened grease from drains with stiff wire or rod.
4. Add grease to inlet with hand gun until small amount of new grease is forced out drain.
5. Remove excess grease from ports, replace inlet plugs, and run motor ½ hour before replacing drain plug.
6. Put motor back in operation.

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ELECTRIC MOTORS, Cont.

INSULATION RESISTANCE

Check insulation resistance periodically. Any approved method of measuring insulation resistance may be used, provided the voltage across the insulation is at a safe value for the type and condition of the insulation. A hand crank megger of not over 500 volts is the most convenient and safest method. Standards of the Institute of Electrical and Electronics Engineers, Inc., recommend that the insulation resistance of the stator windings at 75° C, measured at 500 volts dc, after one minute should not be less than:

$$\frac{\text{Rated Voltage of Machine} + 1000}{1000} = \text{Insulation Resistance in Megohms}$$

This formula is satisfactory for most checks. For more information, see IEEE Standard No. 43 “Recommended Practice for Insulation Resistance Testing of AC Rotating Machinery.”

CLEANING

WARNING

Do not attempt to clean the motor while it is operating. Contact with rotating parts can cause severe personal injury or property damage. Stop the motor and lock out switch before cleaning.

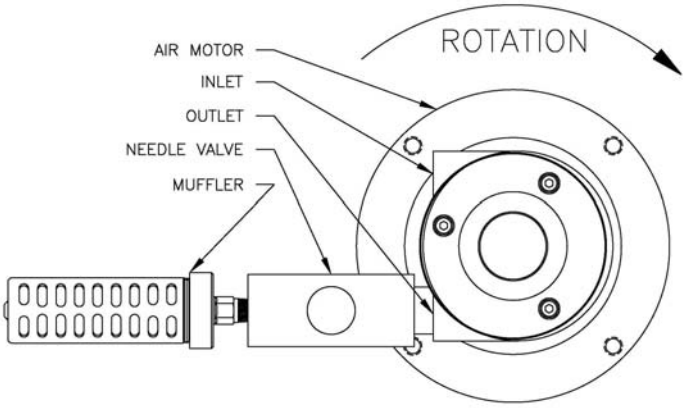
The motor exterior must be kept free of oil, dust, water, and chemicals. For fan cooled motors, it is particularly important to keep the air intake openings free of foreign material. Do not block air outlet or inlet.

On non-explosion-proof TEFC motors, a removable plug in the bottom center of the motor frame or housing permits removal of accumulated moisture. Drain regularly.

AIR MOTORS

If your mixer was supplied with an air motor, certain precautions must be taken as follows:

1. The mixer was shipped with a needle valve installed on the motor inlet port. A muffler is provided for installation at the exhaust port. The function of the needle valve is to control the motor speed.
2. The air supply must be adequately sized to provide the proper pressure and volume of clean filtered, dry air. A pressure regulator followed by an air line lubricator is required prior to connection to the needle valve. A combination filter/regulator/lubricator is commonly used for this purpose. The air line filter should be capable of 25 micron or better.
3. Blow out the air supply line before connecting to the motor to remove any dirt or debris in the air line.
4. The exhaust port must not be obstructed such as to cause a back pressure on the motor. An obstructed exhaust has an adverse affect on the air motor. This may also cause the motor shaft seal to fail thus pressurizing the gearbox and/or mixer drive housing and causing seal failure.



AIR MOTOR ROTATIONAL DIRECTION DIAGRAM

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MAINTENANCE

Mixers operating in wet environments or exposed to washdown should be considered severe applications. Under these conditions water, condensation and cleaning chemicals may accumulate in the motor or, from the other end, be blasted under high pressure past the mixer driveshaft oil seal. Water in the motor may eventually leak through the motor bearing and into the gearbox thus contaminating and increasing the volume of oil. This in turn can cause the gearbox output shaft seal to fail and leak oil into the mixer housing. Oil in the mixer housing will eventually find its way through the bearings and the mixer driveshaft seal and ultimately into the product being mixed.

To prolong the life of your mixer for these applications, a preventive maintenance program should be established and adhered to. The frequency of preventive maintenance inspections are unique to every application and must therefore be determined through experience. Initially, one month intervals are suggested.

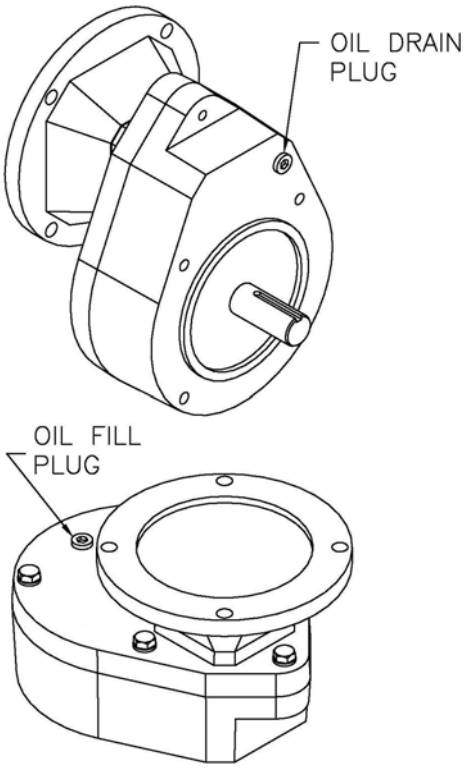
The following steps are recommended as part of a preventive maintenance program:

1. Periodically remove the oil fill plug from the gearbox (with motor shut off and locked out) and check the oil level as described under the heading of LUBRICATION. Also check for the presence of water in the oil. If water is detected or if the oil level appears low, proceed with the following steps.
2. Remove a motor condensation drain plug from the lowest elevation on the motor and the conduit box cover to check for water. If present, separate the motor from the gearbox and inspect for evidence of water in the motor adapter. If water exists, the motor should be disassembled to inspect for water damage to the windings and bearings.
3. Separate the gearbox from the mixer housing and inspect the inside of the housing and around the gearbox output shaft for evidence of leakage. The inside of the mixer housing should appear dry.
4. Separate the mixer housing from the mixer mount and inspect for the presence of water or oil.

If water has been detected in the motor, the bearings and seals should be replaced after drying out the motor. If water is detected in the gearbox motor adapter and the oil level is not excessively low, drain the remaining oil and flush with light oil or kerosene, install new oil seals and refill with fresh oil.

If any oil has accumulated in the mixer housing, it is the result of leakage past the gearbox output shaft seal and will ultimately leak through the bearings. The source of the problem must first be remedied and then the mixer driveshaft bearings and oil seal should be replaced after thoroughly cleaning the inside of the housing.

When reassembling the mixer, replace the o-ring seals in the mixer housing and apply a sealant, such as silicone or “Permatex”, around the face of the motor flange, inside of the mounting bolt circle. Apply an anti-seize compound on the motor shaft and reassemble the motor to the gearbox. Check the motor to be sure all openings are plugged and that the conduit box gaskets are in good condition.



GEARBOX OIL PLUG LOCATIONS

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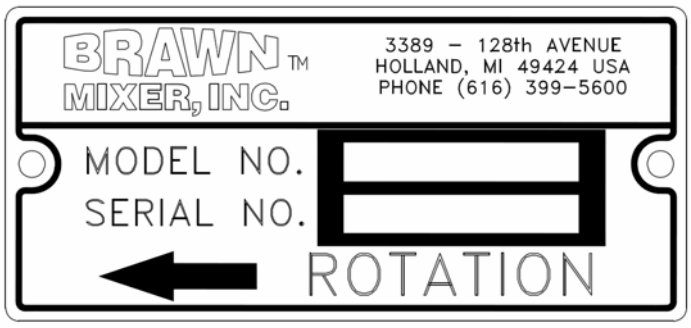
LUBRICATION

Although the gear box is considered “lubricated for life”, the oil level and condition should be checked periodically for signs of degradation. It is factory filled with an AGMA #7C gear lubricant, which is suitable for an ambient temperature range from 30 to 100 degrees F. If the application calls for outdoor installation in extremely cold or extremely warm temperatures, or in corrosive environments, consult the factory.

If it becomes necessary to change the gear lubricant, a drain plug is conveniently provided on the bottom of the gear housing under the motor pinion shaft. A fill plug is located on the top of the housing, above the output gear. Refill with 14 ounces of the recommended lubricant. With the mixer positioned vertically, the fluid level should not exceed the top of the gear. Over filling of the gear box can cause premature seal failure due to thermal expansion of the oil and overheating due to excessive churning.

CAUTION

In the Food and Drug Industry (including animal food), consult the lubrication supplier for recommendation of lubricants which are acceptable to the Food and Drug Administration and/or other authoritative bodies having jurisdiction. Factory supplied oil is not suitable for these applications or this industry.

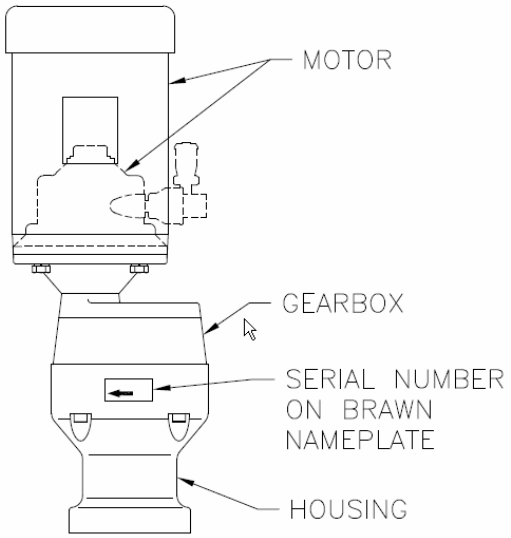


MIXER NAMEPLATE

STORAGE

Units shipped from Brawn Mixer, Inc. are intended to be used within 30 days after receipt and presumed to be stored indoors in a heated building. Store mixers as packaged by the factory. If you intend storing units under adverse conditions or for a long period of time, special storage precautions will be necessary.

1. Store in a sheltered area away from chemical vapors or steam.
2. Cover.
3. Do not store in sunlight or near high heat.
4. Spray light oil on exposed shafts and seals. Remove oil on start-up.
5. Rotate output shaft 360º every 3-4 weeks.
6. Mixers should not be stored near vibrating machinery to avoid damage to the bearings.
7. If electric motors have been subjected to humid conditions, check the insulation resistance between phase and mass and between the different phases. The resistance should not be less than 100 megohms. If the resistance is less, please consult the factory.



BGM SERIES MIXERS

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WARRANTY

WARRANTY: All equipment or parts covered by this manual are guaranteed free from defective material and workmanship for a period of twelve (12) months from date of shipment, under normal use and service. This warranty does not cover failure of normal wear parts unless the failure of such part has resulted from defective material and workmanship. BRAWN Mixer, Inc. will repair or replace, at its option, any equipment which has been found to be defective and is within the warranty period, provided that the equipment is shipped, with previous factory authorization, freight prepaid, to BRAWN's plant in Holland, Michigan, USA. All return shipments are made FOB BRAWN's factory. BRAWN is not responsible for removal, installation, or any other incidental expenses incurred in shipping the equipment to or from BRAWN. In the case of components purchased by BRAWN Mixer, Inc. and incorporated in the equipment, the component manufacturer's guarantee shall apply. NOTE: Any modifications or corrective work done to the equipment which were not specifically authorized in writing by BRAWN Mixer, Inc. shall void this limited warranty, and BRAWN Mixer, Inc. shall accept no liability for any of the corrective work or expenditures which were conducted without their prior, written authorization. BRAWN Mixer, Inc. shall not be held liable for any further cost, expense, or labor to replace equipment or replaceable parts, or indirect or consequential damages.

With the exceptions of the limited warranty set out above, there are no other understandings, agreements, representatives, or warranties implied (including any regarding the merchant-ability or fitness for a particular purpose), not specified herein, respecting this agreement or equipment, hereunder. This contract states the entire obligation of BRAWN Mixer, Inc. in connection with this transaction.

SHOULD WE MAKE A MISTAKE...

BRAWN Mixer, Inc.'s Direct Returns Policy

To ensure proper handling of your return, please take a moment to read the following:

- **ALL** returns require a **RETURN GOODS AUTHORIZATION (RGA) NUMBER**. We are unable to process your return or issue proper credit without an approved **RGA** number.
- **ALL** returns must be **COMPLETE**, including all original warranties, manuals, documentation and packaging.
- **ALL** product must be received within 14 days of issuing an **RGA** number.

How to Return Product

You must have a **RETURN GOODS AUTHORIZATION (RGA)** number before you return any product to BRAWN Mixer, Inc. To obtain this number, call **616/399-5600** and ask for Customer Service. Be sure to have available the following information:

- ✓ your order number
- ✓ the BRAWN product serial number
- ✓ the part number and description of the product
- ✓ the reason for the return

♦ IMPORTANT ♦

- ✓ *The Return Goods Authorization number must be written clearly on all boxes being returned. C.O.D. shipments will not be accepted.*
- ✓ *If the mixer has been in contact with the product, please include MSDS sheets to cover and possible contact. Also, fully clean all surfaces.*

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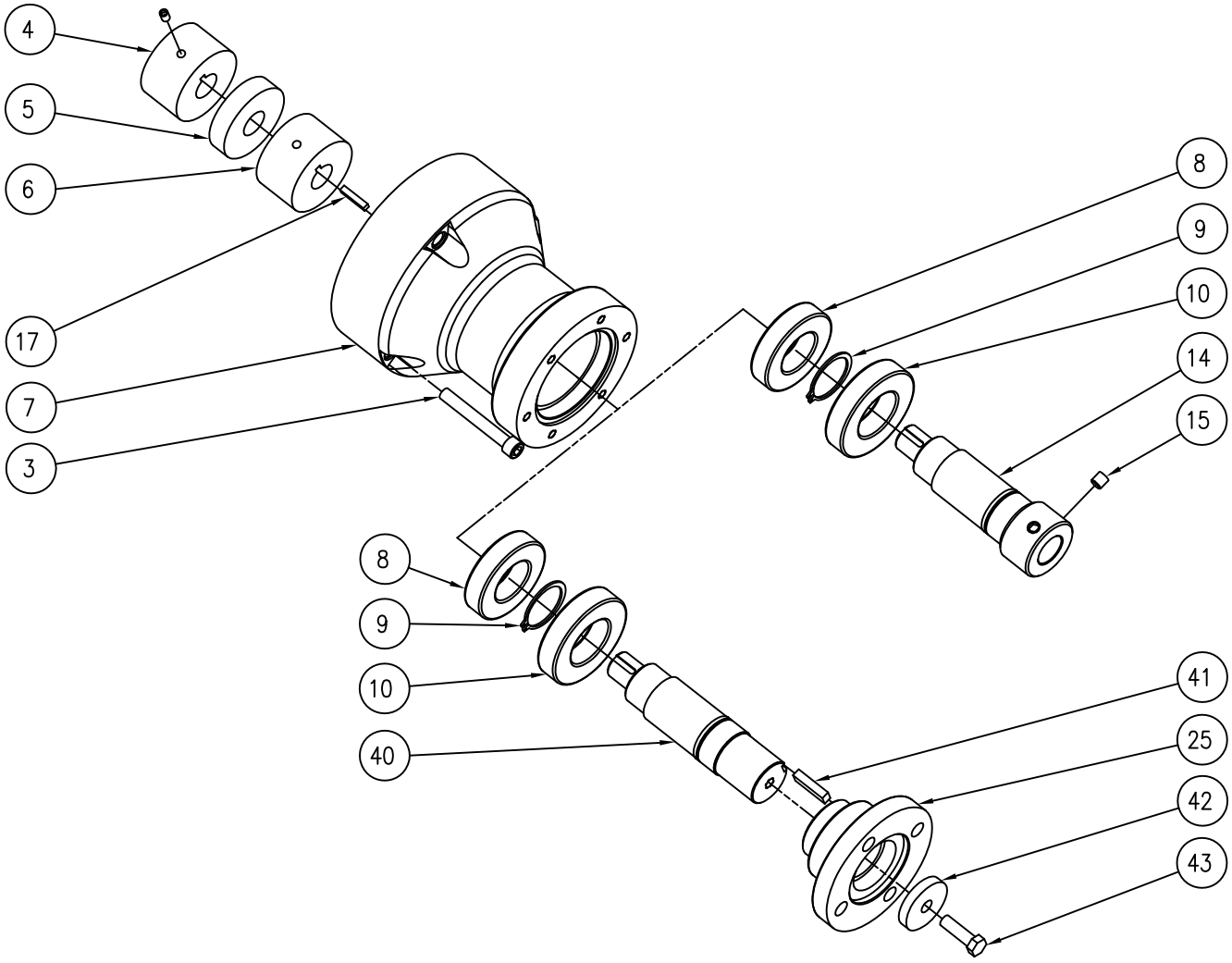

NO.	QTY	PART NAME
43	1	HEX HEAD CAP SCREW
42	1	THRUST WASHER
41	1	KEY
40	1	DRIVE SHAFT
25	1	DRIVESHAFT COUPLING
17	1	KEY
15	2	SET SCREW
14	1	CHUCK SHAFT
10	1	LOWER BALL BEARING
9	1	SNAP RING
8	1	UPPER BALL BEARING
7	1	HOUSING
6	1	UPPER COUPLING HUB
5	1	SLEEVE
4	1	LOWER COUPLING HUB
3	4	SOCKET HEAD CAP SCREW

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DRAWN BY: MDK	DATE: 10/1/10	© 2010
APPROVED BY:	DATE:	

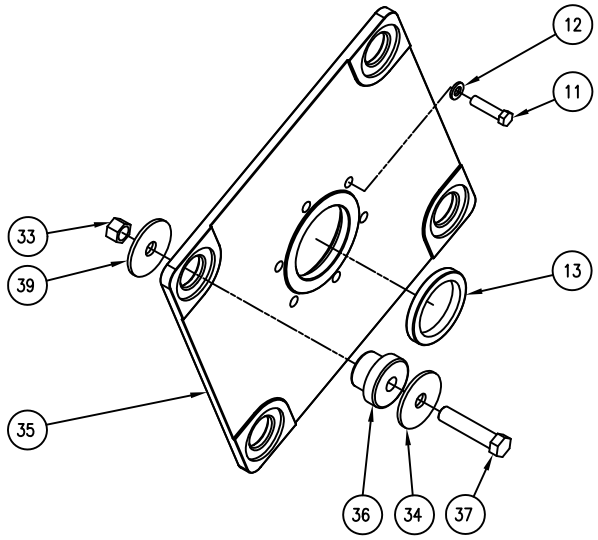
BRAWN™ MIXER, INC.
3389 128TH AVENUE
HOLLAND, MI. 49424
PH. 616-399-5600
FAX 616-399-3084

MIXER MODEL
BD/G HOUSING EXPLODED VIEW

DIMENSION AND ASSEMBLY DRAWING

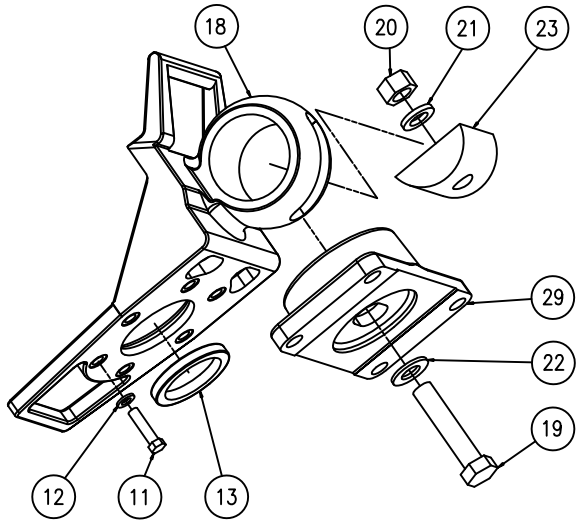
DWG. NO. A- TK0162 REV. -

PLATE MOUNT



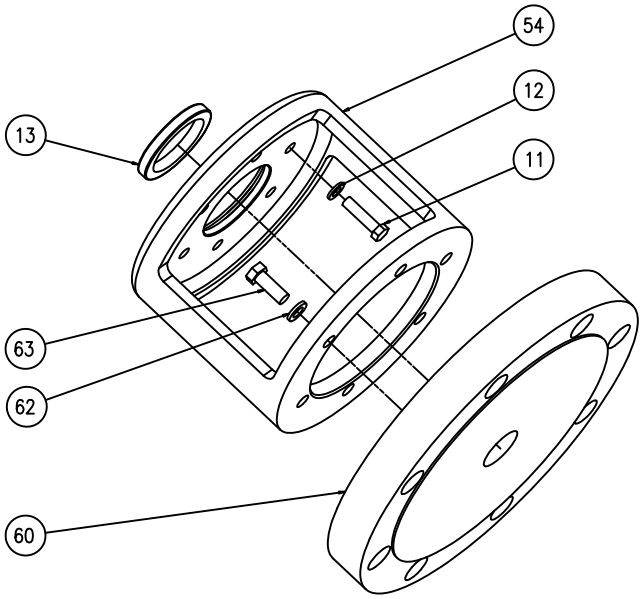
NO.	QTY	PART NAME
39	4	HEAD WASHER
37	4	BOLT
36	4	ISOLATION MOUNT
35	1	MOUNTING PLATE
34	4	TAIL WASHER
33	4	NUT
13	1	OIL SEAL
12	6	LOCK WASHER
11	6	HEX HEAD CAP SCREW

CUP PLATE MOUNT



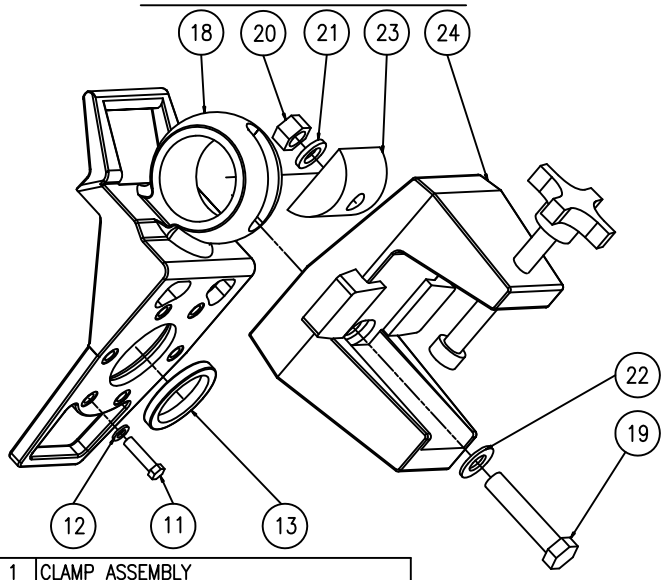
NO.	QTY	PART NAME
29	1	CUP PLATE
23	1	SHOE
22	1	FLAT WASHER
21	1	LOCK WASHER
20	1	NUT
19	1	BOLT
18	1	BALL MOUNT
13	1	OIL SEAL
12	6	LOCK WASHER
11	6	HEX HEAD CAP SCREW

PEDESTAL/FLANGE MOUNT



NO.	QTY	PART NAME
63	6	HEX HEAD CAP SCREW
62	6	LOCK WASHER
60	1	FLANGE
54	1	PEDESTAL
13	1	OIL SEAL
12	6	LOCK WASHER
11	6	HEX HEAD CAP SCREW

CLAMP MOUNT



NO.	QTY	PART NAME
24	1	CLAMP ASSEMBLY
23	1	SHOE
22	1	FLAT WASHER
21	1	LOCK WASHER
20	1	NUT
19	1	BOLT
18	1	BALL MOUNT
13	1	OIL SEAL
12	6	LOCK WASHER
11	6	HEX HEAD CAP SCREW

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APPROVED BY:	DATE:	

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HOLLAND, MI. 49424
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FAX 616-399-3084

MIXER MODEL
BD/G MOUNTING OPTIONS
EXPLODED VIEW
DIMENSION AND ASSEMBLY DRAWING

DWG. NO.	REV.
A- TK0163	-

BRAWN MIXER, INC.

3389 128th Avenue
Holland, MI 49424 USA

Phone: 616/399-5600
Fax: 616/399-3084

PARTS PRICING: BGM(F)-SERIES

ITEM # on Drawing # TK0028 & TK0030	DESCRIPTION	PART NUMBER	PRICE
2	O-Ring	10028601	**$10**
4	Coupling hub	*CF	**$25**
5	Sleeve	*CF	**$40**
6	Coupling hub	*CF	**$25**
7	Housing (painted) - shell only	100025	**$349**
7	Housing (with internals) - chuck coupling	5000802	**$1,063**
7	Housing (with internals) - rigid coupling	5000803	**$1,346**
8	Ball bearing	10008602	**$37**
9	Snap ring	10008501	**$9**
10	Ball bearing	10008603	**$44**
13	Oil Seal	10008801	**$15**
14	Chuck shaft 1" (*CF) Chuck shaft 3/4" (*CF)	*CF *CF	**$296**
18	Ball mount	500074	**$276**
23	Shoe	100695	**$21**
19-24	Clamp assembly	500086	**$292**
25-28, and 40-43	Rigid flange coupling assembly	500079	**$426**
19-23, 29	Cup plate	500088	**$265**
32	Gearbox	10033006	**$608**
35 [BGM(F)]	Plate mount w/shock absorbers	500075	**$338**
38 [BD(F)]	Angle riser	500121	**$175**
44	O-ring	10028602	**$10**

Shaded items = **Recommended Spare Parts Kit**
WHEN PURCHASED AS A KIT: $646

*CONSULT FACTORY- PROVIDE SERIAL NUMBER WITH REQUEST FOR QUOTATION.

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Mixing Solutions™

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PHONE: 616-399-5600 FAX: 616-399-3084

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DAPHNE, AL 36526
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FAX: 251-621-8111
WWW.JHWRIGHT.COM

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B2 EQUIPMENT COMPANY
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